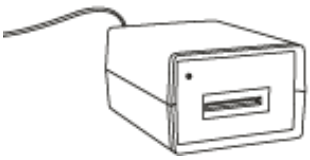
motorised encoder: technical manual

INHOVA
INTELLIGENT HOTEL ACCESS



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1- INTRODUCTION

INHOVA is a system that can combine magnetic stripe card technology-based stand alone electronic locks, stand alone wall readers and safes with stand alone electronic cylinders with contact chip technology and traditional mechanical cylinders.

As the system works with stand alone products (without direct connection to the computer where the management software is executed), we need a device to transfer the information from the computer and those off line products. This device is the portable programmer.

As explained in the user manual and the portable programmer manual, apart from transferring information the portable programmer records the INHOVA electronic keys.

Therefore we need another device for the recording and reading of the magnetic stripe cards that the users will use on the electronic locks, mural readers and safes of the installation.

This device is the INHOVA motorised card encoder.

2- THE MOTORISED CARD ENCODER IN THE INHOVA SYSTEM

Whenever we are using electronic locks, wall readers and/or safes in an INHOVA installation, we will need an INHOVA motorised encoder to record the cards of the users of the system.

Once locks, readers and safes have been installed on the doors and/or rooms we want to control, we will program the locking plan in the management software of the system, which will be installed in one or more computers (if we are using a computer network). Then we will initialise the locks; to do so we will transfer the information from the computer to the portable programmer, and from there to each lock, reader and/or safe.

The locking plan of an installation is the program where we state who will have access to the doors where the locks are installed, and when. Initialising a lock consists in "telling" the lock which door it is, which users it must allow access to and when, that is, in which time zones.

The last step will be to record a magnetic stripe card for every user of the system. This card will contain the information about its user; when the user inserts the card in the locks, the locks will read it and identify the user, giving him/her access depending on what is programmed in the locking plan.

The magnetic stripe cards are recorded in the motorised card encoder, which is controlled from the INHOVA management software of the computer. That is, in order to work the encoder must be connected to the computer, and therefore it acts as a peripheral device.

The motorised encoder does not work if it is not connected to the computer.

3- TYPES: HIGH AND LOW COERCITIVITY

As explained in the lock and card manual, depending on the resistance of the magnetic stripe there are two magnetic stripe cards.

The resistance of the magnetic stripe is called coercitivity and is measured in öersteds. The following table shows the coercitivities of both types of cards:

TYPE OF CARD	COERCITIVITY
LOW COERCITIVITY	300 ÖERSTEDS
HIGH COERCITIVITY	4000 ÖERSTEDS

This information is very important when writing (recording) information in the magnetic stripe of the card, as the recorder (encoder) must suit the type of card used.

For this reason there are low coercitivity card encoders, high coercitivity card encoders or encoders able to record in both card types.

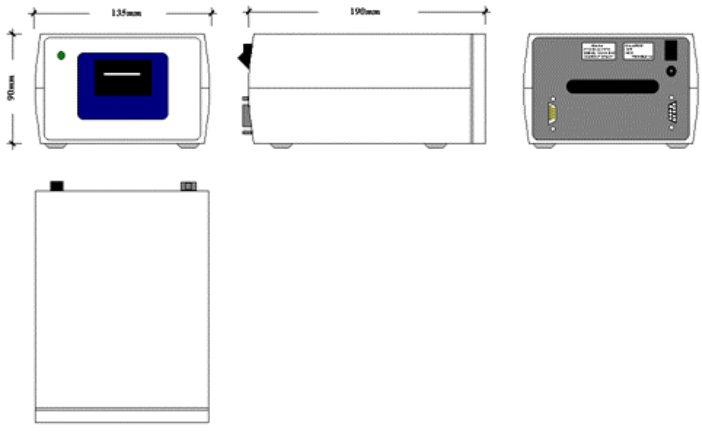
High coercitivity cards are normally used when the users are going to carry the card to identify themselves. That is, the card will be continuously exposed to aggressions that can damage the magnetic stripe. Low coercitivity cards are used when the users are going to keep the cards in a protected atmosphere (wallet, pockets, etc.). For instance, all the magnetic stripe cards used in banking (debit cards, credit cards, etc.) are low coercitivity cards.

4- TECHNICAL CHARACTERISTICS OF THE MOTORISED CARD ENCODER

Since the magnetic stripe cards in the market are completely standard, the encoders/recorders are also quite standard. Therefore their technical characteristics are quite similar.

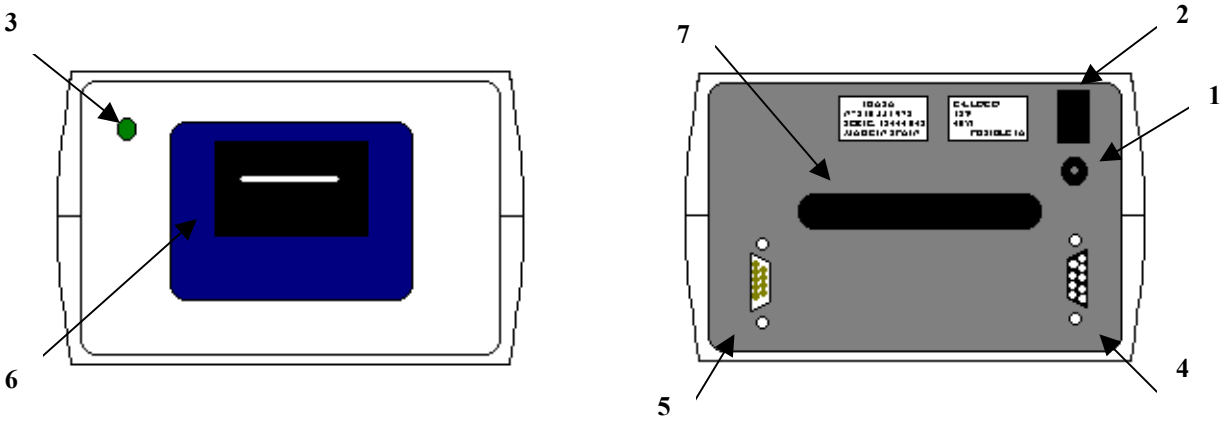
4.1- GENERAL DIMENSIONS

The general dimensions of the INHOVA motorised Encoder are shown in the following illustration:



4.2- CONNECTIONS

The encoder has several connectors at the front and at the back, as shown in the illustration below:



1- Feed cable
2- On-off switch
3- Warning LED : green light when the encoder is on. No light when the encoder is off.
4- Serial connector (female): to connect the encoder to the serial port of the computer. The motorised encoder is supplied with the computer/encoder connecting cable.
5- Serial connector (socket plug): to connect the encoder to the Portable Programmer. When the encoder is connected to the computer, we can connect the portable programmer to the encoder by means of this connector. This way the management software of the system will communicate with both the encoder and the programmer, and we will not have to connect and disconnect the encoder and the programmer alternately in the serial port of the computer.
6- Card slot: when we want to record a card, we send the recording order from the management software of the system. As it is motorised, the encoder will "swallow" the card that we will place in the card slot, and it will record the information sent from the computer on it. Once the card has been recorded, the encoder will eject it through the same slot, located at the front of the encoder.
7- Emergency exit for jammed cards: when for any reason the card inserted on the slot is jammed inside the encoder, we can eject it through the emergency exit located at the back of the encoder

4.3- POWER SUPPLY

The encoder includes the feed cable required, an adaptor between 100-240V and 24V. The characteristics of the adaptor are shown in the following table:

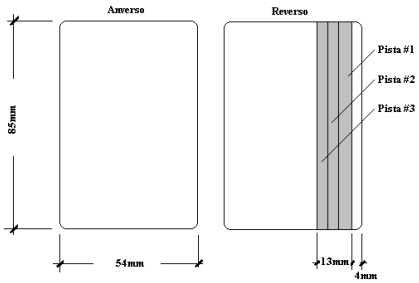
INPUT	100 – 240 V 50/60 Hz 1.0A
OUTPUT	24.0V 1,6 A 38,4W

4.4- GENERAL ASPECTS

4.4.1- Three-track encoder

The magnetic stripe cards used in the INHOVA system are three-track ISO/ABA cards.

The magnetic stripe of the cards is divided into three recording tracks, in which we can record varied information. The INHOVA system uses track 3 of the cards. That is, when we order the recording of a card from the management software of the system, the encoder records the encrypted information in track 3 of the card. Tracks 1 and 2 are reserved for other applications that may be used in the installation.



TARJETA DE BANDA MAGNETICA ISO/ABA 3 PISTAS

Therefore, when we record a card from the INHOVA system, the encoder will record the information in track 3; but this does not mean that the encoder cannot record information in tracks 1 and 2. The INHOVA motorised encoder can actually read and write in any track of the magnetic stripe card. Hence, any other application being used in the installation can use the INHOVA motorised encoder to record "its" information in tracks 1 and 2 of the cards.

4.4.2- Motorised encoder

The INHOVA card encoder is motorised. This means that it has a motor for the automatic insertion and ejection of the cards.

When we want to read and/or record a magnetic stripe card in the INHOVA encoder, we only have to place the card on the encoder's card slot. The encoder will then take the card, insert it on the slot and eject it again after recording or reading it.

4.4.3- Data encryption

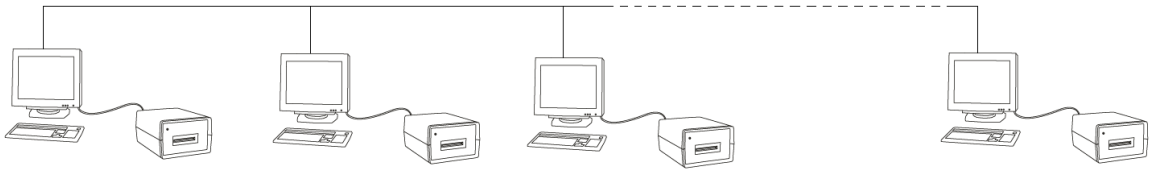
All the information that the INHOVA system records in the magnetic stripe cards that the system users will use to open the doors is encrypted with a special encryption algorithm.

4.5- NETWORK ARRANGEMENT

As we know, the INHOVA system can be arranged in a network. This means that we can set up a network of computers which manage the same INHOVA installation. Therefore, all the computers will share the same database of the INHOVA system.

The INHOVA motorised encoder cannot be shared by two or more computers. When we are managing the system simultaneously from a computer network and we want to record and/or read cards from each computer, we will have to connect an encoder to each computer. That is, we will have to connect an encoder to every computer from which we want to read and/or record user cards.

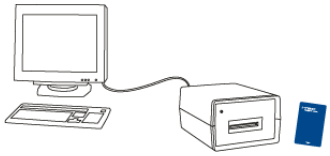
This can be seen in the illustration below:



5- MOTORISED CARD ENCODER: OPERATION

The INHOVA motorised encoder has a very simple operation. Since it is controlled from the management software, the encoder acts as a peripheral device of the computer. Therefore, the only thing we have to do is connect the encoder to the computer and switch it on. From that moment we will control it from the management software of the system.

The encoder is connected to the computer through the computer´s serial port and the serial connector that the encoder has for that purpose. The RS-232 connecting cable is supplied with the encoder.



Besides connecting the encoder to the computer, we must also feed it. To do so we will connect the adaptor supplied with the encoder to both the encoder and the socket (100 – 240V).

Once the connections have been carried out, we will switch on the encoder by pressing its on-off switch. The green LED at the front of the encoder will illuminate.

From that moment we will control the encoder with the management software of the system.

For a correct communication between the computer and the encoder, we must make sure that we select the right serial port in the management software of the system.

In the "Configuration" screen of the system, on the "Network" menu, we can choose between 4 serial ports: COM1, COM2, COM3 and COM4. In most cases we will select COM1, which is the default port. In some computers, however, the COM1 serial port may be being used by another application such as a modem. In that case we will have to select another port.

For more information see the SYSTEM USER MANUAL or get in touch with your distributor.

5.1- CARD RECORDING AND READING

When we want to record and/or read a user card, we will have to do it from the management software of the system. When we click on the corresponding button with the mouse, the computer will send a recording and/or reading order to the encoder.

We will place the card that we wish to record and/or read on the card slot. The encoder will automatically insert the card and eject it when the operation is finished.

For more information see the SYSTEM USER MANUAL or get in touch with your distributor.

6- MAINTENANCE OF THE ENCODER

The INHOVA motorised encoder does not require any specific maintenance other than cleaning the head of the recorder and reader.

To do this we only have to record or read a cleaning card identical to the ones used for the locks.

7- GUARANTEES

The system has a one-year guarantee. The guarantee covers any fault or breakdown in any of the system´s components, provided these faults have not been the result of negligent use.

Any component of the encoder will be immediately replaced if it has a fault or breaks down. Talleres de Escoriaza, S. A. will only replace the encoder with another one with the same characteristics when esteemed appropriate.

8- QUALITY CERTIFICATES

The Quality and Environment Department of Talleres de Escoriaza, S.A. certifies that:

- All the components of the INHOVA encoder have been approved by our Product Engineering Department.
- During the different phases of the industrial process, including the final assembly, we have carried out the necessary device controls to guarantee the correct operation of the encoder, in accordance with the quality requirements of the market.

Thanks to the periodical tests carried out to check the resistance and the life of our products, we have complied with these specifications.

Added to the previously mentioned regarding the INHOVA encoder, the company Talleres de Escoriaza, S.A. (designer, manufacturer and distributor of the reader) we also certifies that:

The Quality Management System of: **Talleres de Escoriaza, S.A.** has been certified by Lloyd's Register Quality Assurance in accordance with the following Quality Management System Regulations:

ISO 9001: 1994
EN ISO 9001: 1994
BS EN ISO 9001: 1994
UNE EN ISO 9001: 1994
ANSI/ASQC Q91: 1994

Approval
Certificate No: 934749

The Quality Management System is applicable to: **The design, manufacture and assembly of mechanical and electronic locks. The dying of lock parts and others.**

And that:

The Environmental Management System of: **Talleres de Escoriaza, S.A.** has been certified by Lloyd's Register Quality Assurance in accordance with the following Environmental Management System Regulation:

EN ISO 14001: 1996

Approval
Certificate No: 772303

The Environmental Management System is applicable to: **The design and manufacture of mechanical and electronic locks.**

In addition,

The INHOVA Encoder complies with the essential requirements of the European regulations concerning electromagnetic compatibility:

89/336/EEC of 3 May 1989

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